

The National Geographic Magazine

AN ILLUSTRATED MONTHLY



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THE NATIONAL GEOGRAPHIC SOCIETY

SPECIAL ANNOUNCEMENT

To fill the vacancy in the presidency caused by the lamented death of Mr Gardiner G. Hubbard, General A. W. Greely, U. S. A., has been designated by the Board of Managers as Acting-President. At some personal inconvenience General Greely has acceded to the request of the Board, but has intimated that his official and other duties will render it impossible for him to serve the Society in this capacity for more than a short time.

The Board of Managers have accepted the resignation of Mr Everett Hayden as Recording Secretary, Mr Hayden still remaining a member of the Board. To fill this vacancy Mr F. H. Newell, a former secretary, has been designated, it being the intention of the Board to employ as Assistant Secretary some person who is qualified not only to perform the clerical duties of the position, but also to relieve the editors of the Magazine by acting as business manager of that publication.

The Society's office has been removed to Room 33, Ohio National Bank Building, on the northwest corner of Twelfth and G Streets N. W. In these more commodious quarters it is expected to so arrange the Society's Library as to make it available to visiting members and their friends. The transaction of business will be facilitated by the addressing of mail to the undersigned at the above address.

F. H. NEWELL,

Secretary

1847, Oct. 1847.



DR. JOHN EVANS
President of the British Association for the
Advancement of Science

1847, Oct. 1847, PL. 18



PROF. W. J. MOORE
Acting President of the American Association for the
Advancement of Science

THE National Geographic Magazine

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DECEMBER, 1897

No. 12

THE WASHINGTON AQLEDUCT AND CANNON JOHN BRIDGE*

By D. D. GALLAGHER

Captain, Corps of Engineers, U. S. Army

The idea of supplying the city of Washington with water at some day was contemporaneous with the planning of the city, and numerous examinations and surveys were made by Major L'Enfant, the engineer and architect of the Government, under the direction of General Washington, of the Potomac river, the Eastern branch, Rock creek, and numerous springs and small streams, as possible sources of future supply.

The first definite plan to be found among the records of the Washington Aqueduct Office is given in a report made in January, 1851, by Brevel. Lieut. Col. George W. Hughes, Corps of Topographical Engineers, to Colonel J. J. Abert, Chief of Topographical Engineers, in compliance with an act of Congress, approved September 30, 1850, appropriating \$500,000 "to enable the War Department to make such examinations and surveys as may be necessary to determine the best and most available mode of supplying the city of Washington with pure water and to prepare a plan and estimate of the probable cost of the same, to be reported to Congress at its next session."

After an investigation of the subject Colonel Hughes proposed to obtain the necessary supply from Rock creek by damming the stream about six miles above the city and bringing the water into a receiving reservoir through a conduit of oval cross-section having an estimated capacity of 8,000,000 gallons in 24 hours.

* Read before the National Geographic Society, October 2, 1897.

It is interesting at this point to compare the estimate of the supply needed for the city in 1851 with that actually furnished in 1897—but 46 years later. The population of Washington and Georgetown was then about 48,000; now it is over 278,000; then 30 gallons was considered by Colonel Hughes a high estimate for the average daily per capita consumption; during the past month the average daily consumption for every inhabitant of the District of Columbia was 173 gallons; then the total estimated maximum consumption of water was 1,500,000 gallons per day; during the past month it actually exceeded 48,000,000 gallons per day.

No action appears to have been taken by Congress toward carrying out the plan proposed by Colonel Hughes, and the next step was one which eventually resulted in the construction of the present aqueduct system. The 32d Congress at its first session appropriated \$5,000 to enable the President of the United States to cause to be made the necessary surveys, projects, and estimates for determining the best manner "of affording to the cities of Washington and Georgetown an unfailing and abundant supply of good and wholesome water." In accordance with this legislation the necessary surveys were made in the winter of 1852-53 by Lieutenant (afterward General) Montgomery C. Meigs, U. S. Corps of Engineers, who, in his report of February 12, 1853, proposed three plans for obtaining the necessary water supply, submitted estimates of the cost of each, and entered into a broad and far-sighted discussion of the subject of supplying the cities with water.

In neging the necessity of a suitable supply he states that it was the general custom in Washington at that time to have all "the water for a family brought by the servant-maids from the street pump," a crude condition of affairs which the average Washingtonian of today will find it hard to believe existed but a little more than 40 years ago.

Briefly summed up, the three sources of supply proposed by General Meigs were as follows: (1) From Rock creek, by means of a dam and a conduit under natural flow. Estimated minimum daily supply, 9,800,000 gallons; estimated cost, \$1,258,863. (2) From the Potomac at Little Falls, six miles above Georgetown, by means of a dam across the river, a canal and pumping machinery to raise the water to the reservoir. Estimated minimum daily supply, 12,000,000 gallons; estimated cost, \$1,662,215. (3) From the Potomac, just above the Great Falls, by means of

a dam, a masonry conduit, two reservoirs, and the necessary bridges. Estimated daily supply, 36,015,400 gallons; estimated cost, \$1,921,244.

This last estimate was based upon a conduit of seven feet in diameter and a bridge of a different design from that finally built over Cabin John creek. General Meigs recommended an increase in the diameter of the conduit to nine feet, which, with the changed plan of the bridge just mentioned, made the final estimated cost about \$2,435,000 and increased the estimated capacity of the conduit to 67,586,400 gallons, a most fortunate change for the citizens of the District of Columbia, for had the seven-foot conduit been built, the limit of its capacity would have been reached about six years ago.

In his report General Meigs urged the adoption of the third plan, calling attention to the fact that the waterworks of this country had been almost invariably designed on an inadequate scale, and that the history of all these works showed that the daily per capita consumption of water was increasing at a rate comparatively rapid. In consequence of this fact and of the rapid growth of population, many of these earlier works proved insufficient within a few years after construction.

Too much praise, then, cannot be given to the man who in 1853 planned a conduit with an ultimate daily capacity equal to one and one-half times the amount then furnished to the city of London, nearly four times that furnished to Paris, two and one-half times that furnished to New York, five times that furnished to Philadelphia, and one and one-half times that then furnished to Rome, although in A. D. 101 Rome had a daily supply of 277,000,000 gallons. Be it remembered that General Meigs did this when the combined population of Washington and Georgetown was but 58,000, which it was estimated would then require for all public and domestic purposes a total supply of but 5,220,000 gallons, about one-fiftieth of the ultimate capacity of the conduit.

General Meigs' recommendation of the enlarged Great Falls plan and his reasons therefor carried such weight that they received the strong indorsement of General Joseph G. Totten, Chief of Engineers, when he forwarded the report to the Hon. C. M. Conrad, Secretary of War, who submitted it to President Fillmore without comment.

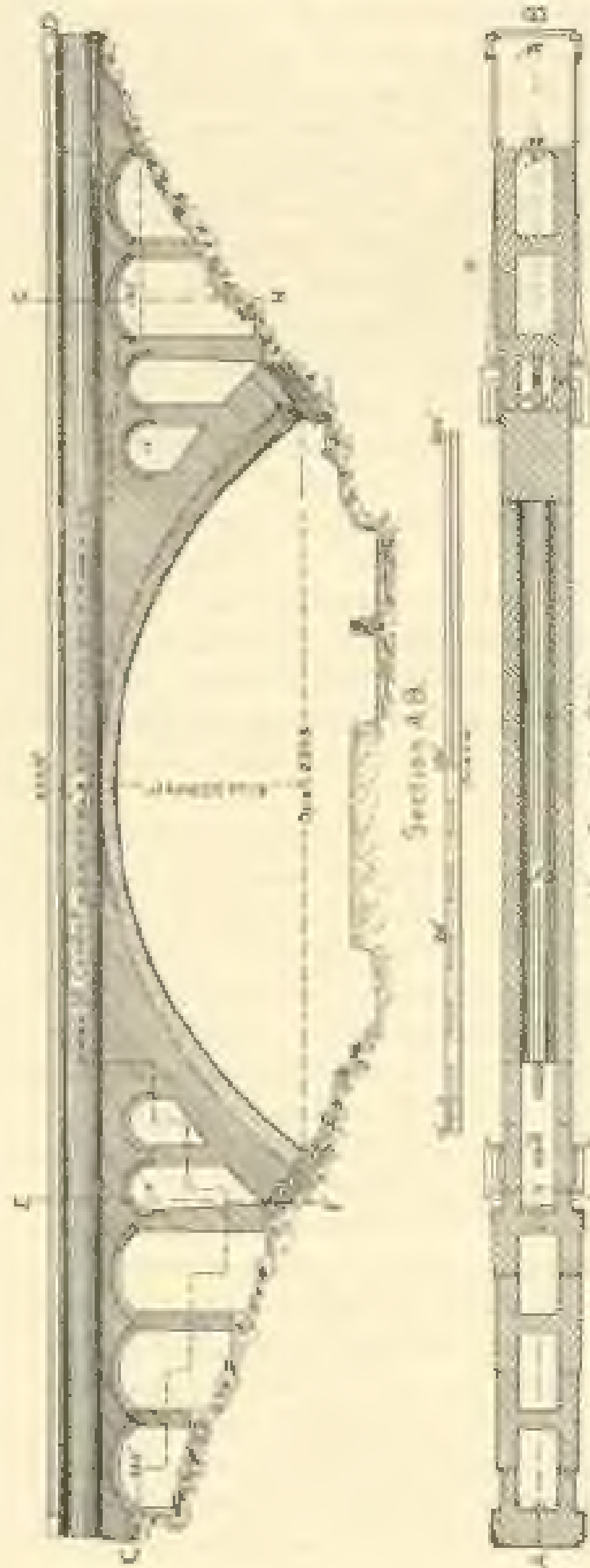
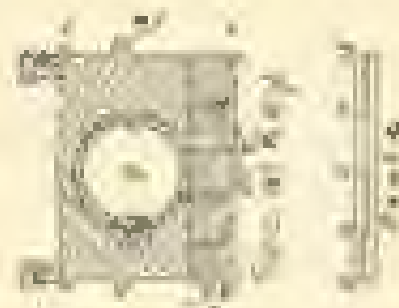
The first appropriation for the construction of the aqueduct was made in March, 1853, and the actual work of breaking ground

was commenced in November, 1853. In order that the city might receive a supply of water as soon as possible, work was pushed upon the receiving (Dalecarlia) reservoir and the conduit connecting it with the supply mains, and on January 3, 1859, water from the Dalecarlia reservoir was introduced into the pipes leading to the city. This was not Potomac water, however, but was supplied by the streams emptying into the Dalecarlia reservoir, which streams are now diverted therefrom by the admirable system of protection works completed in 1895 by Colonel George H. Elliot, U. S. Corps of Engineers, retired. This mode of supply continued until the conduit between Great Falls and the Dalecarlia reservoir was completed, in 1863, and on December 5, 1863, Potomac water was introduced into the Dalecarlia reservoir for the first time.

Corn Island separates the Potomac at Great Falls into two parts, known as the Maryland and Virginia channels respectively. In order to divert water into the mouth of the conduit-feeder at Great Falls a temporary dam of stone and crib work was built across the Maryland channel, 1857 to 1864, which was replaced by a masonry dam completed in 1867. In 1883-'86 the masonry dam was extended across the Virginia channel. In times of very low water in the Potomac this dam, the crest of which was at an elevation of 148 feet above mean tide at the Washington navy yard, did not raise the water to a height sufficient to fill the mouth of the conduit at Great Falls, and in 1895-'96 the whole dam was raised 2½ feet, so that at low stages of the Potomac the mouth of the conduit is just filled.

The Washington aqueduct system as it exists today is, with but few modifications, that originally planned by General Meigs. The water supply is taken from the Potomac river at Great Falls, about 14 miles above the city. At this point a masonry dam eight feet in width on the top and 2,877 feet in length, completed in 1806, extends across the river from the Maryland to the Virginia shore. The water passes from the feeder, under the Chesapeake and Ohio canal, through the gatehouse and into the conduit, which is circular in cross-section, and for the greater part of its entire length is nine feet in diameter and composed either of rubble masonry plastered or of three rings of brick, but where the soil in which it was built was considered particularly good the inner ring of brick was omitted and the diameter was nine feet nine inches. Where the conduit passes as an unlined tunnel through rock the excavation was sufficient to contain an inscribed circle 14 feet in diameter.

CAUTION: Do not use

[illegible]

Location (City, State)	Estimated Population (2000)	Estimated Population (2010)	Estimated Population (2020)
Atlanta, Georgia	420,000	470,000	500,000
Los Angeles, California	3,900,000	4,000,000	4,100,000
New York City, New York	18,800,000	19,000,000	19,200,000
Chicago, Illinois	2,900,000	2,950,000	3,000,000
Houston, Texas	2,300,000	2,400,000	2,500,000
Phoenix, Arizona	1,500,000	1,600,000	1,700,000
San Antonio, Texas	1,400,000	1,450,000	1,500,000
San Diego, California	1,300,000	1,350,000	1,400,000
San Jose, California	1,000,000	1,050,000	1,100,000
San Francisco, California	800,000	850,000	900,000
Seattle, Washington	700,000	750,000	800,000
Portland, Oregon	600,000	650,000	700,000
Denver, Colorado	700,000	750,000	800,000
San Francisco Bay Area, California	4,700,000	4,800,000	4,900,000
Los Angeles Area, California	10,000,000	10,200,000	10,400,000
New York City Area, New York	19,000,000	19,200,000	19,400,000
Chicago Area, Illinois	9,000,000	9,200,000	9,400,000
Houston Area, Texas	6,000,000	6,200,000	6,400,000
Phoenix Area, Arizona	4,000,000	4,200,000	4,400,000
San Antonio Area, Texas	3,000,000	3,200,000	3,400,000
San Diego Area, California	3,000,000	3,200,000	3,400,000
San Jose Area, California	1,500,000	1,600,000	1,700,000
San Francisco Area, California	4,000,000	4,200,000	4,400,000
Seattle Area, Washington	2,000,000	2,200,000	2,400,000
Portland Area, Oregon	1,500,000	1,600,000	1,700,000
Denver Area, Colorado	2,000,000	2,200,000	2,400,000
San Francisco Bay Area, California	4,700,000	4,800,000	4,900,000
Los Angeles Area, California	10,000,000	10,200,000	10,400,000
New York City Area, New York	19,000,000	19,200,000	19,400,000
Chicago Area, Illinois	9,000,000	9,200,000	9,400,000
Houston Area, Texas	6,000,000	6,200,000	6,400,000
Phoenix Area, Arizona	4,000,000	4,200,000	4,400,000
San Antonio Area, Texas	3,000,000	3,200,000	3,400,000
San Diego Area, California	3,000,000	3,200,000	3,400,000
San Jose Area, California	1,500,000	1,600,000	1,700,000
San Francisco Area, California	4,000,000	4,200,000	4,400,000
Seattle Area, Washington	2,000,000	2,200,000	2,400,000
Portland Area, Oregon	1,500,000	1,600,000	1,700,000
Denver Area, Colorado	2,000,000	2,200,000	2,400,000

The total length of the conduit and the two by-conduits around the reservoirs is 12 miles, and its slope is nine inches in 5,000 feet. Constructed by General Meigs in connection with the aqueduct system are five bridges, two of which are unique among engineering structures and will be briefly described later.

At the distributing reservoir the water passes into four cast-iron mains—48 inches, 36 inches, 30 inches, and 12 inches in diameter respectively. The Dalecarlia reservoir has a storage capacity of about 150,000,000 gallons, is practically without paved slope walls, and is perfectly protected against pollution from the drainage of the surrounding country. The distributing reservoir has a storage capacity of about 150,850,000 gallons and is divided by a puddled and paved wall (through which is a passageway) into two sections containing 97,680,000 and 53,250,000 gallons respectively. The Georgetown high-service reservoir has a capacity of about 1,500,000 gallons.

In addition to the three reservoirs already mentioned, which form a part of the aqueduct system, there is another reservoir, built and controlled by the Commissioners of the District of Columbia, called the Fort Reno reservoir, with a capacity of about 4,500,000 gallons, the reference of its water surface when the reservoir is full being about 120 feet above mean tide at the navy yard.

The Dalecarlia and distributing reservoirs supply the pumping station and that part of the District which lies below 100 feet above datum. The areas lying between the levels of 100 and 210 feet above datum are supplied by pumping from the U-street station directly into the distributing mains, the Georgetown high-service reservoir being held as a reserve supply. The areas having a greater elevation than 210 feet above datum are supplied from the Fort Reno reservoir. It will be observed, therefore, that the total present storage capacity of all reservoirs is a little less than 307,000,000 gallons, or about six days' supply.

In July, 1897, for the first time in its history the conduit was permitted to discharge its maximum flow, which by current meter observations was found to be 76,500,000 gallons per 24 hours. Today the average daily consumption is about 45,000,000 gallons, or about 60 per cent of the ultimate capacity of the conduit. Ten years ago it was but 35 per cent, or less than 27,000,000 gallons.

To avoid misapprehension it should be stated that while the conduit can supply the distributing reservoir with 76,500,000 gallons per day, yet the pipes leading from the reservoir to the

supply it, and no more will be felt by consumers until some

from the distributing reservoirs into the city.

Major Meigs was in charge of the work upon the Washington aqueduct from the time of the first survey until July, 1850, when he was relieved by Captain J. H. Williams, of the U. S. Corps of Engineers, whose tenure was succeeded by Lieutenant James M. C. Martin, of the same corps. On February 22, 1861, after an ab-

scharge of the Washington aqueduct was transferred from last

April, 1867, when it again passed into the care of the War Department, and has remained there ever since.

In his report upon the proposed line of the canal, General Meigs noted that several miles after leaving Great Falls the only serious obstacle in its whole course, the valley of Canada John Brown, is encountered. This valley, he says, must be crossed

longer "they always occasion a loss of head or else exceed in cost the bridges they replace." He therefore first proposed to cross the river by a bridge 452 feet long and 90 feet wide, sup-

being 521 feet. The estimated cost of this bridge was \$72,400.

Instead of this, the granited stone arch in existence, was erected.

The total length of the bridge, including abutments, is 450 feet. Its width is 31 feet 4 inches, and is built above the bottom of the river 14 feet. The span of the arch is 920 feet and the rise 87 1/2 feet. It was begun in 1857 and completed, with the exception of the parapet walls, in 1862. These walls were built

bridge prior to that time by the war guards. At the original

curse yards of stone masonry concrete, and brickwork, and is cost complete, about \$74,000. The concrete areas of 4,400 yd

• Museum double gate also the site entrance of Montgomery County offices, and the double arch, spandrels, and gable end are of Series A sandstone.

Contrary to the general impression, the space between the expanded and abutment walls is not solid but contains several columns of air, as shown in the drawing, to effect a saving in masonry. Slender columns were transported to the job by boat over the Mississippi and then carried up the Cache la Poudre creek, across which a dam was built near the mouth of the creek, a railroad was connected with the latter by a trestle.

will also depend on the past history of the life cycle of the individual, for example.

אברהם אבינו ואלהינו

English and French President of the U.S.

1468 111100, Symbols of War

4. Total of 100,000

President of the U.S. National Academy of Sciences

4410 1941-42 of 4416 4417 4418 4419 4420

This script is signed & countersigned the name of John S. Davis, and it was put out in the summer of 1862 by the order of the Secretary of the Interior, Hon. Caleb B. Smith, to the War Department the record of had been recently transcribed. If together with the early historical facts to which was Secretary of War at that time was the subject sought by the visitor, the present and future would be more than a distant glimpse of a vanished world to which the present time is a mere memory & impression upon the memory of the visitor that would have been the case had it been left to the past.

in concluding the description of the Washington postcard and its special structures, it is proper to call attention to another of its images, to which we have already alluded in our previous article, for its historical origin by means of the old stone bridge for the general population.

The bridge is unique among the suspended bridges of the world in that it is two spans in one, through which pass about one-half of the water used by the city, themselves forming a solid rib which supports the roadway overhead. The span of this bridge is 287 feet and its rise 26 feet. At the time it was

and it was the only one of its kind in the world at that time. But, alas, this institution is at the present day. It was much researched upon by foreign engineers, and was illustrated in many of the foreign scientific and engineering journals of the time.



POLLUTION OF THE POTOMAC RIVER,

by F. J. NEWELL.

Chief topographer, U. S. Geological Survey.

The facts concerning the pollution of the Potomac river are of peculiar concern to the residents of Washington, because of the fact that the supply for domestic and industrial use is derived mainly from that stream, only a small portion being obtained from other sources.

But opinions differ widely as to whether these pollutions are dangerous, or may be sources of overpressure, danger to the community.

In order to discuss this subject intelligently it is necessary to have clearly in mind the situation of the catchment basin of the river, as well as the relative position of the various tributaries and of the principal towns and industrial districts. We will, of course, confine our attention to the portion of the river which flows through the

midway of the eastern side of the United States. It drains the Appalachian mountains, its drainage basin embracing portions of the states of Pennsylvania, Maryland, West Virginia, and Virginia.

mountain areas unite in creeks or rivers flowing either north-

ly for the greater number of the tributaries, or toward the south-east, the streams coming from the northern part of the basin being relatively small. The main river itself receiving from

the mountains, having a southeasterly direction, and when in certain its course is quite crooked.

As a source of power is not so valuable as might be expected from the size of its drainage area. At the points where the river

cuts through the successive mountain ridges the slope is rapid

through the Great Falls. At almost as high a level the city of Washington has been placed, its situation being governed by the questions of navigation and of water power. These have been the factors which have contributed largely to the growth of the

large extent as from New York, the river. Just before the river

is converted into an aqueduct, which, following along the south side of the river, delivers by gravity a supply of water to the reservoirs, which in turn feed the water system for the city.

One of the most notable features is that the river itself is only a few short streams from the north; the greater portion of the

run-off is from the parallel narrow valleys between the mountain ridges.

In limestone, the mountain ridges being of sandstone or other hard resisting rocks. These ridges rise to heights of 2,000 feet or more and are densely forested. The precipitation from these ridges, usually in the form of rain, is partly evaporated or taken

the steep hillsides to the valleys.

This run-off water is pure and clear, but upon reaching the

cultivated lands, and becomes, in time of flood at least, turbid

as the stream flows, are not only rich, but prosperous farms are to be found throughout the valley. These have made the growth of villages and towns, some of which, under the stimulus of small towns the farming industries, are rapidly growing. As a rule these are situated upon some stream, since their location has

refuge from all these towns is, as a matter of course, discharged into the stream.

Potomac river as the name is commonly applied, results from the union of the North branch, the stream above which is

12 miles away from the city. The North branch and the main

stream into which it empties for a line state boundary between Maryland and Virginia. It is, therefore, larger than that of any other state. At this point two rather large branches

issue, the North branch flowing to the west of the Allegany front and the South branch to the east. The total drainage area of the North branch at Cumberland is 801 square miles, or about 8 per cent of the entire catchment area above the city of Washington. The total drainage area of the North branch at its mouth, or where it joins the South branch, is 1,505 square miles, being a little smaller than the area drained by the latter.

The waters of the North branch of the Potomac, even near its head, are naturally somewhat dark in color, and it is stated by the local inhabitants of the region that it has always been liable on the probability to the production of decaying vegetable matter and on forests. This is further increased by the effluents from the sawmills, tanneries, and coal mines, so that at the old mill dam near Keyser the polluted water deposited by the fall of a small dam a few feet up in the early morning a thick layer of whitish foam on top.

In order to obtain a general conception of the amount of pollution it is necessary to know how much water is carried by the river. This, of course, varies from day to day and even hour by hour. These minor fluctuations are slight and by taking special care during some of the most difficult it is possible to know how much water is delivered by the main stream and its principal tributaries. Without entering into a discussion of how this is accomplished, it can be said to state that the results are given in a table showing the average daily flow throughout the year in millions of feet per second.

The average flow of the river and here is mentioned to be that obtained by Mr. William H. Weston in 1870, 1,800 cubic feet per second. It is probable that during the past fall (1896), owing to the protracted dry weather, the discharge sank to about this amount. At that time the water received into the river is stated to have been from 75 to 100 million feet, or from 5 to 6 per cent of the total volume of the river.

It is evident that the quantity of water in the Potomac, especially when it is compacted into a flood, carries a flood of material which must necessarily become less so. The quality of the water

is therefore becoming more and more a matter of concern be-

the natural flow of the stream is practically unaffected. As be-

the most part the residual matter left by solution of limestone
It exists in such small quantities that while the water is in motion
it is redeposited and may remain in suspension for days, even
after the water said to have been put in a glass bottle.

The proportion of toxic mud varies from time to time, being
greater during floods and least during periods of low water
when the supply is received by percolation from a large area.

Corable as far as human observation is concerned, but the flow
in the river is greatly increased and the proportion of sewage
must be accordingly increased.

When the currents in part are less than they are at present and
any of the eye through the city and around the mouth of the
the mud and impurities, on the other hand, are not so readily
noted. The larger particles of the waste from the towers and
the other structures are washed away and the water is slowly
and gradually carried up or exhaled or passes it to solution in
the form of various organic compounds. These, as a rule, do not
materially discolor the water, and some of them may even be
giving a bright, sparkling effect, but at very dilute sewage when
exposed to light and air for a few hours may be unobjectionable

substances of human and animal or vegetable life.

The pollution of the West of the water supply would be very
great if the low waters of the Potomac were cut off just below
Cato Island and when the water is very low at that point, it
should be remembered that it is there a comparatively small

where the minimum discharge at Port of Rocks, so as to
serve, is about 1800 cubic feet and the Monocacy in a number

it is of the waterworks at Green Point.

In times of low water, when, of course, these portions bear
the largest ratio to the total supply, the Potomac at Green Point

percentage contributes not more than six per cent of the water

it 100 miles of broad river bed agitated and broken
 as oxygen and escape leading to its purification. When
 the wind force contributes to same rate the quantity of the water,
 it is extended to the supply for this city is as likely as
 it should be.

Sufficient has been said to indicate that a considerable amount
 of filth of all kinds is being daily deposited in the river, and that
 this is steadily increasing. It is not desirable to question or
 characterize this material under any stronger term than sewage.

It may properly be claimed, however, that no matter how much
 the material is at the point where discharged, it becomes disinte-
 grated and destroyed before the water carrying it reaches the Wash-
 ington region. The scientific question of course is a large one.

It does not seem probable that sewage is so rapidly destroyed as
 much of the river water would have.

The conditions along the Potomac are particularly favorable,
 for the water passes over many broad riffles where it is exposed

to air and stirred up, while others may possibly be stagnated and

the chemicals used in the process, such as acids and oil or fat, are
 very greatly diluted, and by reaction upon each other and
 upon the small amount of bacteria and solution probably form
 harmless compounds. The scientific question therefore is as
 to the behavior of the small micro-organisms to which the material

Take, for example, the typhoid bacillus, which is said
 to be able to survive 10 days or more and to develop in

aqueous solution for 14 days in 24 hours. It may be

the journey of from two to four days or more for in the sewers of
 towns up the river to the mouth of the aqueduct.

We are comforted by the assurance that harmful bacteria are
 rarely found in Potomac water; but still this may not set us
 wholly at rest for negative evidence is such a case proves little.
 The discovery of the probable danger from sewage

or exports in other lines, for the work in hand pertains mainly

The facts which have been put on record are those concerning the nature and quantity of water in the river and basin of the

so when the sewage or waste is diluted by the annual flow of the stream.

Legislation can be secured to regulate such matters, the former as in the case of all water-lake areas or coast-areas as a sort of sewer into which towns and manufacturing

establishments empty their refuse, and this fact must be borne in mind in all considerations of water supply. The permanent of water supplies from this source should be regulated—*that is to say*, pollution should be prevented as far as possible so that the water may for a city stand unfiltered. The State of Massachusetts has set the example in this respect, preventing a pollution of streams by gradually forcing towns to provide an adequate filter for sewage before allowing it to discharge into rivers and so by preventing similar pollution for the water which is to be used for municipal purposes. The system of treatment and filtration has been found to be efficient as not only in taking out visible parts and in

potentially matters of pollution.

THE DELTA OF THE MISSISSIPPI RIVER*

by H. L. COCHRAN, C. E., and others.

The Mississippi delta proper extends over just a few by the mouth of the river above the city of New Orleans. The land areas comprising this great mass of sedimentary deposits have been partly destroyed by numerous artificial wells which have from time to time been driven for the purpose of obtaining of fresh or potable water. There are, notable instances, and where previously the most careful observations were made, the stream

the coal was broken and the work ended, but the ground was pumped out the last foot.

* Adapted from paper read before

at the British Association

Many interesting facts bearing upon the history of the geology and formation of the Mississippi delta were brought to attention by a paper read by Mr. J. A. Dicks at the meeting of the

executives of the late Mr. James H. Eastman, late War Department, as to what is the legal plane of reference for determining the depths and widths of channels which Mr. Eastman secured by the law of the General Congress to maintain between the deep water of the South Pass of the Mississippi river and the wall of a

the 1000 bayou, which leads out to the Gulf from one of the now unused passes of the river and branch of the Mississippi.

The mouth of the South Pass this magazine was in a low state of preservation. The exterior was subject to floods, there were no cranks

which, out with the surface of the water stretching across the area, was covered the entire shore, the end of which must have been a least 100 feet below center. That was in the year 1847. Ninety years later a part of the structure had been removed. The mouth of the river and part of the river bed to show that the substance had continued steady during that period of time, been a river at about the same time as during the preceding time in a few years. It may be stated that this river has a few the instance and from other information, as at the mouth of the Mississippi, about one-half of one-tenth of a foot per annum. No more substantial evidence to prove the general subsidence of the delta land might be stated. Not only are these lands subsiding in a general direction, but they are often found to be subsiding in a general direction. It is a very interesting as well as physical fact that an accurately measured lake has been

to be 712 feet in length. It has been found impracticable to maintain with sufficient accuracy for reference purposes bench marks, level heights, and tide gauges. This subject is fully discussed in the report of the Mississippi Survey and

structure is a river. These figures in bench marks and level

has available." This remark is made by Mr. J. A. Dicks, an assistant engineer to the commission.

In page 265 of the same report the current section itself contains Mr. Clarkson's statement by its own person, as follows: "The main object of this survey was to elicit some information regarding the question of the stability of the land also at the mouth of the river. In the report of Assistant Engineer Clarkson, appended to the report of the secretary a number of figures and comparisons are given, based upon the survey and prior ones, and indicating a progressive depression of the land at its base the mouth of the river." An interesting diagram, designed to

indicate down or the level of the land had gone up over one

forward to show, in addition to the above, that the lands had gone down and that the level had not changed. It is a fact well known to you, to wit, that the delta of the Mississippi

is overflowed by high waters, as a result of the subsidence

in the construction of levees. There are at present no animals

of the river. These were formerly a little more abundant equal to the abundance of the river.

As to the question of the rising of the land level, as a result of one and a half inches of the land level, from the mouth to Florida does not show any indications of any such elevation. The

rate is steadily from year to year and from cycle to cycle the we can naturally expect that, with the exception of small areas, the land level will be the same surface of the land as it has been previously at the same level. The land surface is

very slight as compared with the great amount of water that makes and maintains the land level. From various causes it is estimated that the mean precipitation, over the average, is about 40 inches per year, or about 1.5 inches per day. This is the average precipitation when it is

that the land, which according to a calculation from the above

the land level.

* This is a paper by the author, published in the *Journal of the Mississippi River Commission*, Vol. 1, No. 1, February 21, 1900.

THE ANNEXATION FEVER

The problem of the delta of the Mississippi is an illustration of the great areas of the delta of the various continental rivers of sedimentary materials, and the steady, though slow, subsidence of these areas, is one which should be taken into account in dealing

with it entirely for in the great areas of the lower delta country, far outweighs the other elements the future generations from the subsidence of the land delta lands below the level of the sea and

selah, yet it is safe to say that the development of the delta

system, at whatever cost to the riparian states and the Federal Government, will be so remarkable that people of the whole United States can well afford, when the time comes, to build a protective levee against the food waters, as the city of New Orleans has done on a small scale against the sea waters of Lake Pontchartrain and as Holland has done for centuries and is now about to do on a still larger scale in restoring the sea waters themselves to the great projected reclamation of the lands submerged by the Zuider Zee. We have once said, "the country is

and its delta channels to the sea." This great stream, with its

as our main network, and containing
and far as it goes so far be that
human ingenuity is overtaxed to increase their productive use,

of this republic."

THE ANNEXATION FEVER

A curious and interesting example of the survival of a center,

ized, in greater or less degree

In the olden time, when the earth was peopled by savages, the acquisition of territory by conquest involved not alone the

world here. In whatever way it was done the conquered territory was made a source of profit to the victorious party.

Force means simply a change of jurisdiction. The laws and the flag of one state are substituted for those of another. The conqueror, as of the territory conquers taxes, and in turn assumes

the responsibility from foreign enemies. The nation is not enlarged by the acquisition. It may or it may not be stronger or not, according to the character of the acquisition.

But while the results of acquiring territory have thus become radically changed, the desire the instinct for its acquisition re-

mains true its extension. In other words, the pressure of the acquisitive instinct has merely upon the fact, each nation being

driven on the basis of property.

The question whether acquisitions of territory are desirable or not is not the question of the proposed acquisition, its situation and

its extent.

The United States, of all nations, should go very slowly in this matter, not because it is at the head of the nations in population almost as a habit of people to its num-

ber of population to prepare or reduce

Viewed critically, our annexations of territory up to and including Texas.

right of our statement. We needed Louisiana to extend the

extended us, removed Spanish power from our midst, and gave us the entire Atlantic and Gulf coasts, the acquisition of Texas and

up our area of jurisdiction into compact form. But why we should have purchased Alaska is past floating out. A few of our citizens have profited by the fur and fish trade, but the government has been embarrassed and put to much expense on no

are certain in the future

made up of our own kin, the vast body of the population is

a desirable addition to our numbers. The population of these

the our vessels can coal there freely in time of peace. In time of war our vessels will find occupation enough at home without wandering away from the coaling station on our shores. We

power especially a naval power. It is certain that in case of war with such a power and if our first aim would be to give up all such outlying dependencies, since their defense would be utterly impracticable.

There is no doubt, however, to the Hawaiian matter. I hope I do not find the ruling class in Hawaii worse than the better

have reached this stage of altruism.

What has been written of Hawaii applies with a yet greater

different language, with no experience in self-government, with a

and we hope to make them one with us? Can we afford to divide our national legislature within years or score of years? Can we afford to assume responsibility for the acts of such a home government as the Canadians are likely to set up?

As with Hawaii, there are questions about the advantage to Canada of such annexation, but in this case even persons would say nay, for, assuming for the moment that the interest of the United States is to secure the production of sugar, production of this product would be too greatly increased by such an act.

There is constantly more or less talk about the annexation of Canada. There is no objection to this but it is case of any

other interest than from North America would add a population which on the whole is no less civilized than the average of our people and a territory a part of which, at least, is of value as an agricultural region.

Having glanced at the merits and demerits of proposed an-

nexions and glanced at the history of other nations as to the matter and the results of their acts. Of all nations, Great Britain has shown the greatest greed for land. Her jurisdiction is as wide as the earth. The little island in western Europe governs many millions of square miles, including Canada, Australia,

Whatever the case of St. George waves, good government and safety to persons and property are assured. To enforce her jurisdiction over all these dependencies she finds it necessary to main-

of a large nation; and yet, in spite of her large standing army and her immense navy, she is one of the weakest of nations, because her responsibilities have been increased in still greater proportion.

What has she gained by her policy of annexing territory? In

alone are found not less than 40 to 50 of persons of no descent. Justly more of her people have gone to the United States than to her own shores.

she has been, on that whole, one of the greatest agencies for and, by the spread of civilization, hast the world has known.

SIR JOHN EVANS AND PROF. W. J. MCCLELL

Whether one of the ultimate results of that long felt tendency to which constitutes so striking a characteristic of the present age will be to render it so possible for a man to become prominent in more than one department of intellectual activity

than for the Advancement of Science having this year been in more than one department of Science.

By occupation a civil engineer and paper manufacturer and highly successful in both capacities, Sir John Evans has made

trious by the names of Horsfield and Brewer, of Lyell and Murchison, of Huxley and Tyndall, he has only one more scientific connection to look forward to—the presidency of the Royal Society.

It is five years the junior of his eminent English country, Prof. W. J. McClell, a man of no less a reputation in the world of science than Sir John Evans, has been elected to the presidency of the Royal Society. The wonder and envy of all civilized nations to expect a decision to

United States and of the State of New York. He established the and other depots throughout southeastern United States, to a of over 20,000 square miles. In his later work as ethnologist in charge of the Bureau of American Ethnology he has made the aboriginal races of the North American continent, and his reports and his numerous contributions to the transactions of various societies. No worthier representative of American science could have been found to preside over the American Association during the year of the visit of the British Association to this continent than Prof. W. J. McGee. J. L.

SOME RECENT GEOGRAPHIC EVENTS

considerable geographic interest have so far been allowed to go

a brief notice of them, if only as a matter of record.

at) of Dr Sven Hedin from Central Asia. The successful ascent of Mount St Elias by Prince Eugène of Savoy, and the Mammoth Ex-

death of Professor Edgar Mottrey.

Here S. A. Andree, accompanied by Dr Strömborg and the en-

expedition as an expedition de if not also lately freemasonry en-

surprise, but Herr Andree is an experienced at least, have not met him in his skin—courage, and endurance. Dr Nils Ekblom

Andree has discovered a new route across the Arctic from Josef Laid; that he would endeavor to make his way to the nearest depot that has been established in advance and that



no surprise—of fact in the event of no communication being received from him until next summer or fall. Mr Frederick

sees nothing to prevent Andree, with good luck, from accomplishing his purpose for any one to say where he is likely to be

been taken. The *Belgica* will go first to the east of Graham's and year will be devoted to Victoria Land. The steamer is well and substantial design is

shown, which left England on July 11, 1894, in the steam yacht *Albatross*, arrived in the Thames on the 14 of September last.

Discovery of the northern coast line of Franz Josef Land, hitherto absolutely unknown, but proved if not the true existence of the island at least the fact that it does not lie in the angle that has been assigned it. The three years spent in the Polar

watch was borne by Mr. A. C. Larsen, who has since placed the *Albatross* at the service of Lieutenant Peary's latest

Arctic geography, but to various other spheres.

Lieutenant Peary's most recent expedition to Greenland is of importance on account of the success that has attended his efforts to bring back with him the Cape York meteorite, 45 lb.

quest, even our authorities leave no room for doubt as to its extraterrestrial origin.

The return of Dr. Sven Hedin for a four years' exploration

Dr. Hedin left Stockholm in October, 1891, returning to that city, the first time, on May 11 last. He made many important discoveries among which were two important ones, now buried in the sands, whose paintings and sculptures are witnesses to a high de-

and Norway and a few private individuals.

The Duke of the Abruzzi (Prince Luigi of Savoy) and his com-

on July 31. It took 38 days of hard travelling to reach the foot of the mountain from the point of embarkation, but the actual

ascent, while extremely arduous was made under most favor-

able—an long looked forward to—was made in the last week of

June only a few reached the summit, and the inevitable death

of July 27-28, cast a gloom over the entire subsequent process. Professor M. C. Lee, who occupied the chair of chemistry in the Oregon State University, was an experienced

climber. A valuable article from Japan on the A. title of Mount Adams, Washington, appeared in the Vol. 1891, number of this magazine. J. F.

GEOGRAPHIC LITERATURE

The Frontiers of Geography. By Sir Archibald Geikie. Pp. x + 207. London and New York: Macmillan and Co. 1897. 22 00.

"How the study of the earth began in the New World instead of the

on largely neglected and quickened by the discovery of the Americas, by the discovery of the earth's surface (presented on that point north.

concerning their opportunity and their work. In the half dozen or more lectures, the history of the progress of the progress is followed, but with the historic reference to the western hemisphere. It

is singular that among a people so next to the youngest and of the sciences, no competent student has sought to write the history of the progress of the progress, though some cases in this direction and our own March has taken up our report of the progress to the progress of these

As we know Sir Archibald, with unprecedented facilities, with the constant desire of tracing without prejudice these efforts which con-

cerning the progress of the progress of the progress. The task is

progress of science.

Progressing with the progress, Sir Archibald has passed by the progress and also the progress of the progress.

in bringing out clearly the important contributions to ethnogeography made by one whose name was so long and heard in this generation. Jean

the earliest known geologic map, one of the first to describe accurately

to accurately note the geographical distribution of disease, first occurrence of the volcanic eruption of an extinct volcano of central France. Turning then to Werner and to H. von Siedel his interpreter, Lachapelle with our eyes "the eye of the eye," his promises to travel could duly be of America, Thurgau, von Hall, Highland, C. von Thurgau, von Hall,

and a series of less known makers of the science, but treatment having been more satisfactory in geography than in geology of his own full appreciation of modern physical geography—the New Geology—American geologists find the work very much in first class, for reason of the content of such names as those of our own Hall, the principal author of the New York edition, of Hagedorn the prophet of northern geology and of Flower, the discoverer of the basaltic rock that the history of phy-

east travel. While its substance is made more up by a full history

Japan, the Islands of the East. By Ellen Holman-Schneider, Author of *Turkey and Days in Japan*. Pp. 350, with illustrations. New York: The Century Company. 1907. \$1.00.

East—our readers are indebted to this century Company for some lively and pleasant fifty pages of as artistic work-making as the year has seen—artistic in typography and artistic in illustration, and all more artistic than all this is but the publishers' good fortune in library form and content—and the book is no less instructive than artistic. To ward the end of the present century the spirit of conquest wakes from the long sleep of the dark ages, and first there and then Southern and Central on careers of exploration and colonization. As we look into

but nowhere has been brighter more of the Dutch on the world's checkered have not been followed with equal attention—our land by long, disappearing power. So far as the long war was concerned enough, the state of a provincial in regard to some sort of contribution toward the world wealth of Amsterdam and "Groningen" reduced by us, to add it to the The Hague, where Java was at the more rapidly placed in the possession of the Dutch East India Company. True, there is a rich literature grows out of the Dutch conquest and colonization, in

with these records in the language of the Lowlands, yet to the mass of the people, people, in what it forms our greatest part of the world when



New and Expanded Geography. By Jacques W. Redway, B. A., & S. P. H. With maps and illustrations. New York: Doubleday, Page & American Book Company, 1906. 480 pp. 12.

For many years teachers have realized that geographical text books were unsatisfactory, and that the teaching of geography was as a consequence equally so, but without being able to better the situation.

Geography, as it has been heretofore taught in the schools, was a system. It told the story of a mass of unconnected facts relating to the earth's surface. Teachers and pupils are not beginning to understand that geography is in the truest sense a science, in that as phenomena of the earth proceed from cause to effect, and that geography is the study of all phenomena upon the so-called land surface of the earth.

The birth of a new science of geography, by the study of the surface of the earth, gave a decided direction to geography teaching. The "Committee of Ten" appointed by the National Educational Association in 1892, in its report to the world the meaning and use of geography. It was a step in the right direction, but at the same time it limited the scope of geography to a study of the surface features of the earth. Later, the "Committee of Five" took a great step in advancing progress in the science of geography in its final report, and, as a result, not only as a picture of the surface features of the earth, but of its influence upon man and his activities, which is the true meaning of all geography.

The above book is the first of a series of new geography books being issued by the American Book Company. Its scope is to follow the new system of the report of the Committee of Five, and to show not only the shape of the surface features of the earth, but their relation to man, his life and his activities. It also includes the most approved geographical methods, beginning top of all from the known facts as known, from the things which he can see and appreciate as facts, his senses to those which he must see only by the aid of his imagination. It is not only illustrated but it is to read and make, and the illustrations are used for the purpose of assisting the text, not merely to make a pretty book.

We think the teaching of our common text books on geography, it is safe to say that in scope and method of treatment this book is far the most successful that has yet appeared.

H. C.

PROCEEDINGS OF THE NATIONAL GEOGRAPHIC SOCIETY, SESSION 1897-'98

Lecture and Field Meeting October 2, 1897—Saturday afternoon excursion to Canyon de la Poudre by electric cars. Field meeting in the afternoon. Attendance about 250. After introductory remarks by President Hammond, short addresses were delivered by Mr W. J. Morris on the

causes of formation of Colorado Water. A paper presented by Capt. B. D. Washburn, U. S. Corps of Engineers, on the Colorado Bridge and the Wash-



English Equinox was then read by Mr E. B. Tuck, and the meeting adjourned to inspect the bridge and explore the surrounding country.

Special Meeting, October 22, 1897 — President Hall presided in the evening. Afternoon lecture by Prof. Knopke on *Arctic and Antarctic*.

Receipts to Dr. Hansen, October 20, 1897 — Evening reception to Dr. Fridtjof Nansen by the National Geographic Society at the Arlington Hotel. President Hall presided. One hundred of our honorary reception committee, selected the guests and brought them to Dr. Nansen. About 1,000 persons were present. Later in the evening Dr. Nansen made a address of welcome, and after remarks by Vice-President Crosby and Engineer Charles Melville, Dr. Nansen addressed the Society, expressing his cordial appreciation of the hearty welcome and the good wishes to his numerous explorers, especially those of the *degenerate* expedition, for they have of their own voyage in the *Fram*.

Special Meeting, October 22, 1897 — Mr W. J. Melville in the chair. Vice-President Crosby presided. Presentation of *Arctic and Antarctic* to President.

Regular Meeting, November 3, 1897 — Vice-President Crosby presided in the chair. Mr. Herbert T. Hill gave an illustrated lecture on the Geography of Japan and the influence of the islands on development.

Excursion and Special Meeting, November 8, 1897 — Regularly afternoon excursion to Long Island by a special car for excursionists, whereon the party consisting of about 100 members and guests, walked to the foot end of the island. The following evening was given to order by Mr. Jackson and Mr. Frederick V. Carter to be given a short address on the celebration of 100th of Anthony Lewis. Later at a meeting on the east side of the island Mr. Corbin spoke of arrangements for the National celebration of Seattle, with a short and interesting lecture.

Excursions — None have been held as yet.

September 16 — Ladies' Club. P. Roberts, U. S. A., Mrs. Corbin, Dr. Hansen, R. B. Redkey.

October 6 — Mrs. Mary O. Agnew, Rev. C. M. Fort, Major H. G. Hayden, Mrs. Julia P. Jackson, H. M. Grayson, L. A. Connor, J. M. Dugan, Mrs. F. W. Cl. Dyer, L. O. Warren, Mrs. T. M. Harrison, Edwin A. Hill, Mrs. N. M. Hargrave, Edgar Johnson, M. D., Mrs. Virginia Knapp, Mrs. J. E. Kendall, Henry Knopke, M. D., Chas. F. Mather, U. S. A., W. F. Nadeu, Miss Louise A. Nash, Wilfred H. Rogers, Miss Mary K. O'Toole, A. Patton, M. D., Mrs. C. Augusta Pope, Hon. L. A. Pratt, G. W. Prescott, M. D., J. W. Foster, Wm. J. Foss, Chief Engineer C. R. Barker, U. S. N., David G. Smith, Jr. G. L. Spencer, A. H. Thompson, Miss Mary E. C. Walker, Miss Helen L. Walsh, Edw. C. Wilson, Miss Jane W. Woodland, Miss Helen L. Wright.

October 22 — Miss Anna K. Agnew, Miss Jennie P. Anderson, Dr. Frank Baker, H. L. J. Buchner, Henry T. Carter, Eugene Bryson, Miss Fannie Curran, Robert S. Chason, Thos. H. Clark, Major C. E. Dye, Geo. L. Evans, W. J. Elston, M. D., C. G. Gould, Miss Fannie Gould, F. P. Mackay, Mrs. Wm. Hayden, Andrew Hopkins, F. M. Hoxby, Dr. L. O.

Charge d'Affaires, Ac. Ac., Legation of Sweden and Norway, Christiania.
 H. Jansen, U.S.N., Mrs M. L. Jansen, Miss N. L. S. McLean, Geo.
 van der Meer, Mrs Mary J. Myers, Rev. E. H. Padlock, Mrs Helen
 C. Perkins, Edw. J. T. Peters, Capt. J. Perren, Gen. H. Plant, Jr., Frank
 Playter, Fred. W. Pratt, Rev. William Radcliffe, L.D., F. J. Randolph, Jr.,
 Miss E. A. Knapp, T. B. Rogers, H. J. Schroeder, D.D.S., Hon. H. W.
 Seymour, N. H. Stone, Miss E. J. Svedely, Paul Swenson, Thos. J. Sullivan,
 Dr. J. M. Swenson, Miss Ida Thompson, Mrs. Thos. L. Tait,
 Judge W. Vanderwater, Hon. F. A. Van der Lip, Surgeon W. K. Van
 Dyke, U.S.N., Miss Margaret S. Vidal, Major A. L. Wagner, U.S.A.
 H. L. Walther, D.D.S., W. F. W. Wadsworth, Miss C. Mel. Wright.
 October 29. Mrs Anna C. Gundersen, Miss C. R. Garnett, Major H. von
 Beyer, Wm. T. Biehl, Gen. Z. R. Bush, U.S.A., Col. G. B. Brackett, Miss
 S. Clark, Miss Florence Cooper, Señor Don Luis F. Cerezo, Dr. S. L. Cole,
 Miss M. F. Edgeridge, Louis T. Furber, Lawrence C. Forman, Miss L. M.
 Fox, Hon. James A. Garry, Miss Mary C. Gorton, Mrs Mary J. Hedgren,
 Habs. F. H. H. Col. A. L. Hough, U.S.A., Miss F. S. Knutson, Rev. E. B.
 Leavitt, Chas. A. Lehto, Wm. W. Lehto, J. T. Mann, Frank R. Martin,
 S. E. McClure, Mrs Donald McLean, Col. Wm. H. Michael, Wm. Moore,
 M.D., Fred. A. Olson, J. A. Peterson, U.S.A., Jesse L. Parker, Miss Melan
 Y. Pearson, Miss Eva H. Quinn, Prof. Geo. L. Raymond, Miss J. E.
 Richards, Geo. A. Ross, Miss Mary I. Sedgley, Mrs R. H. Sheldis, Rev.
 L. A. Smith, Capt. A. Smith, Capt. Mel. Swenson, Geo. N. L. Swenson,
 U.S.A., Mrs H. R. Tamm, Geo. Totten, Jr., Rev. John Van Ness, Dr.
 Geo. B. Welch, Chas. Westinghouse, Jr., E. S. Whitney, Miss G. H. Wil
 son, J. R. Womer, Elton Wolf, Mr. Alexander Zander, Russian Legat
 ion, Miss Lillian L. Zimmerman.

GEOGRAPHIC NOTES

FINLAND

Latest Returns. The report of the cadastral survey of Great Britain
 shows that the area revised during the year ending March 31, 1907, was
 4,623 square miles. The sale of land was valued at £17,713.

Ice-land. The Althing or assembly of parliament, has resolved to grant
 an annual subsidy of 35,000 kronor for 20 years to a company which has
 undertaken to lay a submarine cable from Iceland to Scotland via the
 Faroe Isles. The Danish government also has promised 100,000 kronor,
 and it is expected that the cable will be laid early next summer.

Canada. The price per metric ton of lumber in Montreal is valued now at \$3,000,000 tons. The imports have risen from £2,500,000 in 1911 to £2,800,000 in 1912. In 1911, but according to Sir T. E. Mack, United States Commissioner General at Montreal there is not an equivalent in natural lumber the strongest forest regulations which have so long been in force. Mr Mack is of the opinion that the rate at which a constant use of forests is now being made in Japan, Sweden, and other, whose countries will soon have the same experience as Spain, which has been subjected of a part of her principal riches by the short-sighted policy of past generations.

ASIA

Korea. Korea is beginning to appreciate the rice products of Japan as Japanese manufactures are coming to predominate of other countries out of the Korean market simply by virtue of their cheapness.

Hong-Kong. The total tonnage entering and leaving the port of Hong-Kong in 1906 amounted to 10,000,000 tons. Of this about $1\frac{1}{2}$ millions represented the tonnage of junks and other steamers, leaving most steam tonnage being engaged in foreign trade, of which about an one-half was to Japan.

A railway connection has now been established between Moscow and Vladivostok, and will no longer be attended for transit at a cost of 100 rubles. The Russian government has purchased ten tons of the best Swedish furniture.

NORTH AMERICA

Canada. The income output of British Columbia in 1906 amounted to \$7,100,000, as compared with a total of \$2,000,000 in 1890.

Mexico. The Mexican government has officially inaugurated a concession for a rail road from El Estero to the Pacific coast. The length of the line will be 372 1/2 miles, and the construction of a government agrees to pay the proprietors an aid of \$400,000. It has also granted a concession, without stipulation, for the construction of a railroad from Pasaquina, Durango, to the Rio Grande, state of Chihuahua, west, and El Estero, to a point on the Pacific coast in the state of Sonora. U. S. General R. M. Burke states that the numerous treaties of the region through which these railroads must pass is very complicated.

AUSTRALIA

The Australasian population during 1906 amounted to 2,370,000, an increase of 147,000 since the preceding year.

The areas of the colony of Western Australia cover an estimated area of 20,400,000 acres and can thus be reckoned to be set to the value of £171,000,000.

1908, when Queensland will be represented

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No.	Name	Age	Sex	Occupation	Address	Remarks
1	John Doe	35	M	Teacher	123 Main St	
2	Jane Smith	28	F	Nurse	456 Oak St	
3	Robert Brown	42	M	Engineer	789 Pine St	
4	Mary White	30	F	Homemaker	101 Elm St	
5	William Black	55	M	Retired	202 Maple St	

No.	Name	Age	Sex	Occupation	Address	Remarks
6	Elizabeth Green	25	F	Student	303 Cedar St	
7	Michael Lee	38	M	Doctor	404 Birch St	
8	Sarah Hall	22	F	Artist	505 Walnut St	
9	David King	48	M	Lawyer	606 Cherry St	
10	Linda Scott	33	F	Manager	707 Peach St	

No.	Name	Age	Sex	Occupation	Address	Remarks
11	James Taylor	50	M	Farmer	808 Apple St	
12	Karen Adams	27	F	Librarian	909 Orange St	
13	Christopher Evans	36	M	Police Officer	1010 Grape St	
14	Amanda Wilson	24	F	Teacher	1111 Lemon St	
15	Benjamin Moore	45	M	Engineer	1212 Lime St	

No.	Name	Age	Sex	Occupation	Address	Remarks
16	Michelle Carter	29	F	Designer	1313 Coconut St	
17	Gregory Hill	40	M	Writer	1414 Coffee St	
18	Stephanie King	26	F	Marketing	1515 Tea St	
19	Anthony Scott	37	M	Chef	1616 Butter St	
20	Christina Lee	23	F	Student	1717 Sugar St	

No.	Name	Age	Sex	Occupation	Address	Remarks
21	Jonathan Baker	41	M	Engineer	1818 Honey St	
22	Rebecca Hall	28	F	Teacher	1919 Jam St	
23	Kevin White	34	M	Manager	2020 Ketchup St	
24	Olivia Green	25	F	Student	2121 May St	
25	Christopher Lee	39	M	Engineer	2222 Mustard St	

No.	Name	Age	Sex	Occupation	Address	Remarks
26	Emily Taylor	27	F	Designer	2323 Pickle St	
27	Matthew Adams	35	M	Engineer	2424 Potato St	
28	Sophia King	24	F	Student	2525 Sauce St	
29	Benjamin Scott	42	M	Engineer	2626 Sugar St	
30	Isabella Lee	26	F	Teacher	2727 Tea St	

No.	Name	Age	Sex	Occupation	Address	Remarks
31	Lucas Brown	38	M	Engineer	2828 Vine St	
32	Grace White	29	F	Teacher	2929 Walnut St	
33	Henry Green	45	M	Engineer	3030 Olive St	
34	Chloe Lee	23	F	Student	3131 Pepper St	
35	Isaac King	40	M	Engineer	3232 Corn St	

No.	Name	Age	Sex	Occupation	Address	Remarks
36	Ava Taylor	27	F	Designer	3333 Bean St	
37	Leo Adams	36	M	Engineer	3434 Lentil St	
38	Charlotte King	25	F	Student	3535 Pea St	
39	Samuel Scott	43	M	Engineer	3636 Pumpkin St	
40	Amelia Lee	28	F	Teacher	3737 Sesame St	

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1. The first edition of the book was published in 1963.
 2. The second edition of the book was published in 1978.
 3. The third edition of the book was published in 1993.
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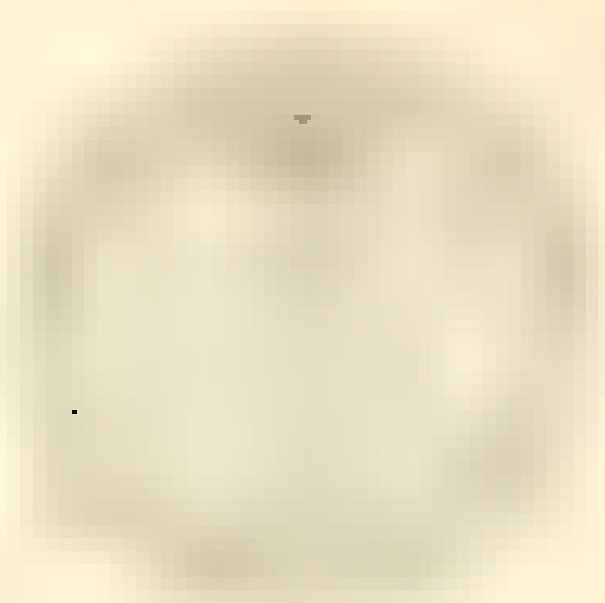
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VOL. VIII—YEAR 1897

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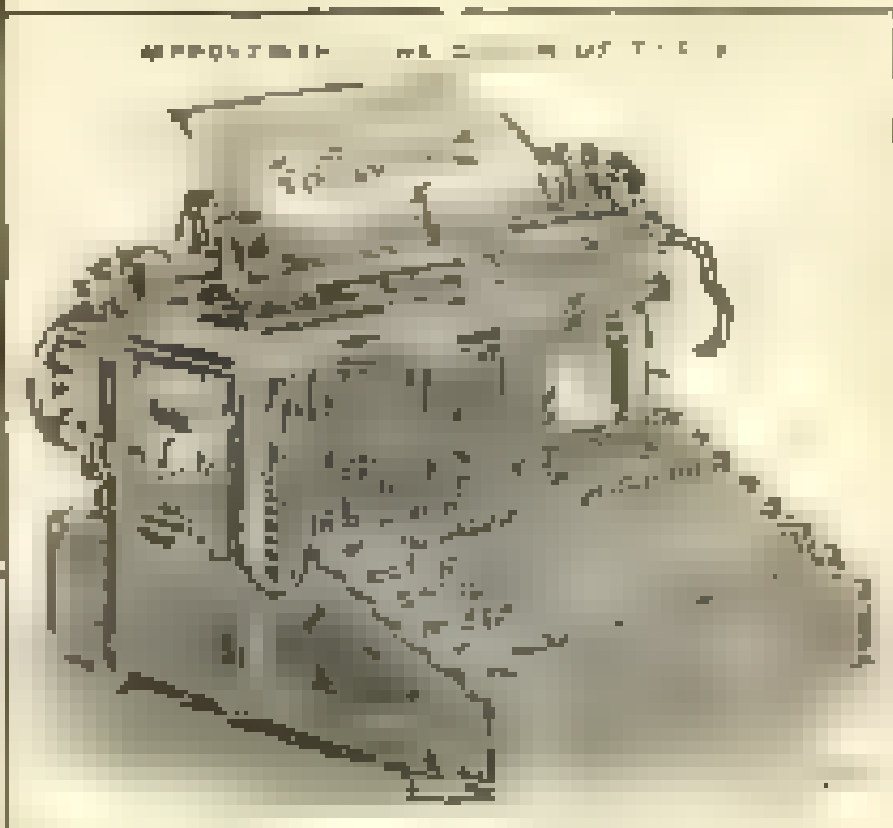
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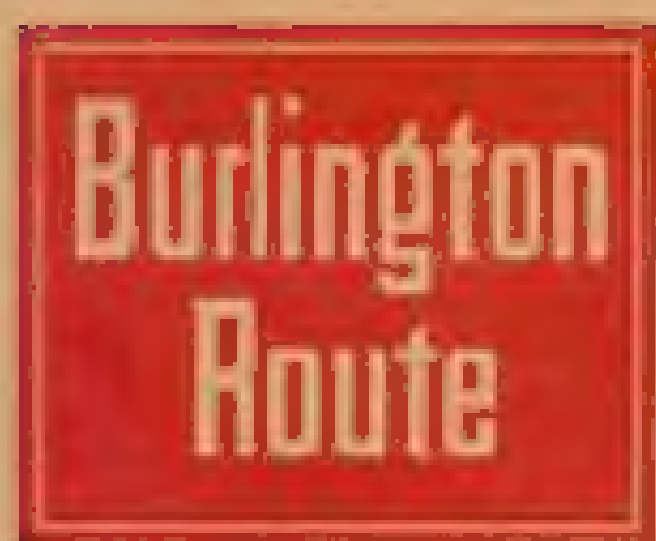
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